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EXAMINER	
HARPER, V PAUL	
ART UNIT	**PAPER NUMBER**
2654	

DATE MAILED: 10/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/824,064	EJERHED, EVA INGEGERD	
	Examiner	Art Unit	
	V. Paul Harper	2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *16-20* is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

1. Claims 1-4, and 9-13 are rejected under 35 U.S.C. 102(a) as being anticipated by Wang et al. ("A Question Answering System Developed as a Project in a Natural Language Processing Course", ANLP/NAACL Workshop, May 4, 2000), hereinafter referred to as Wang.

Regarding **claim 1**, Wang describes a question answering system that derives answers from a plain text document (abstract, Fig. 1). Wang's method includes the following steps:

- analyzing a computer readable representation of said question clause with respect to syntactic functions of its constituents and the lexical meaning of its word tokens (Fig. 1, §2, 1st ¶, question is tagged as to part-of-speech, semantic information, and lexically disambiguated; see Fig. 2, note, features shown include LABEL=subject—syntactic function);
- defining, in response to the analysis step, a set of conditions for a clause in said natural language text database to constitute an answer to said question clause (Fig. 1,

item 5, Sentence-to-Question Comparision; §2, features for comparison; Fig. 2, §2.4; §2.5.2, ¶2, "full set of features performed better"),

- said conditions comprising a condition stipulating that, for a clause in said natural language text database to constitute an answer to said questions clause, at least one of the constituents of said question clause should have a corresponding constituent in said clause having the same syntactic function and an equivalent lexical meaning (§2.4, e.g., a comparison is made using phrase-to-phrase comparisons; §2.2.1, synonyms considered; §2.5.2, ¶2 "full set of features performed better");
- identifying clauses in said natural language text database that satisfy said conditions (§2.4, comparisons are made between each sentence and each question, comparisons are stored); and
- returning answers to said question clause by means of the identified clauses that match said conditions (Fig. 1, Answer with the Highest Score; §2.5).

Regarding **claim 2**, Wang teaches everything claimed, as applied above (see claim 1). In addition, Wang teaches "a verb condition stipulating that a clause constitutes an answer to said question clause if a lexically headed constituent having the syntactic function of main verb of said question clause has a corresponding lexically headed constituent in said clause bearing the syntactic function of main verb and having an equivalent lexical meaning" (Fig. 2, examples for matching where processed items include TYPE=verb; §2.2.2, 1st ¶, Verb phrases have feature types ...; §2.2.2, VPs have feature type **Base**).

Regarding **claim 3**, Wang teaches everything claimed, as applied above (see claim 1). In addition, Wang teaches "a subject condition stipulating that a clause constitutes an answer to said question clause if a lexically headed constituent having the syntactic function of subject of said question clause has a corresponding lexically headed constituent in said clause having the syntactic function of subject and having an equivalent lexical meaning" (Fig. 2, examples for matching where processed items include LABEL=subject; §2.2.2, Label1 ... e.g., subject; §2.2.2, NP have feature type **Base** [rood word of head word of NP]).

Regarding **claim 4**, Wang teaches everything claimed, as applied above (see claim 1). In addition, Wang teaches "an object condition stipulating that a clause constitutes an answer to said question clause if a lexically headed constituent having the syntactic function of object of said question clause has a corresponding lexically headed constituent in said clause having the syntactic function of object and having an equivalent lexical meaning" (Fig. 2, "Cub Scouts" LABEL=object; §2.2.2).

Regarding **claims 9 and 10**, Wang teaches everything claimed, as applied above (see claim 1); in addition, Wang teaches "wherein there is an interrogative pronoun in said question clause, further comprising the step of: determining the syntactic function of the queried constituent of said question clause in response to the analysis step and said interrogative pronoun; and wherein the syntactic function of the queried constituent of said question clause is determined as the syntactic function of said interrogative

pronoun" (§2, syntactic and semantic analysis is performed on the query, §2.5, §3 in particular ¶1, who-questions are given special consideration).

Regarding **claim 11**, Wang teaches everything claimed, as applied above (see claim 9). In addition, Wang teaches "the analysis of lexical meaning of word tokens comprises an analysis of the broad semantic class of each word token of said natural language text database, and wherein the broad semantic class of the queried constituent is determined in response to the interrogative pronoun (§2.2.1,interfaces with WordNet to determine a word's base/stem, semantic type, and synonyms; lexical categories include **type** [interrogative]).

Regarding **claim 12**, Wang teaches everything claimed, as applied above (see claim 1). In addition, Wang teaches "extracting from said natural language text database portions of text comprising clauses satisfying said conditions" (Fig. 1, Answer with the Highest Score; §2.4, last sentence, "each sentence was passed to the answer module"; §2.5).

Regarding **claim 13**, Wang describes a question answering system that derives answers from a plain text document (abstract, Fig. 1). Wang's system includes the following:

- storage means comprising said natural language text database which has been analyzed with respect to syntactic functions of constituents, lexical meaning of word

tokens, and clause boundaries (Fig. 1, Plain Text [Story and Questions] item 3 with inherent storage of the Plain Text [natural language text database]);

- analyzing means for analyzing a computer readable representation of question clause of a natural language question with respect to syntactic functions of its constituents and lexical meaning of its word tokens (Fig. 1, input [Questions] followed by items 1, 2, and 3; §2.2);
- defining means, operatively connected to said analyzing means, for defining, in-response to an analysis performed by the analyzing means, a set of conditions for a clause in said natural language text database to constitute an answer to said question clause (§2.5, Answer Modules), said conditions comprising a condition stipulating that, for a clause in said natural language text database to constitute an answer to said question clause, at least one of the constituents of said question clause should have a corresponding constituent in said clause having the same syntactic function and an equivalent lexical meaning (§2.4; Sentence-to-Question Comparison Module; ¶3, Values for these comparison matrices were calculated for each sentence by comparing the features of each phrase type ....); and
- answer finding means, operatively connected to said storage means and said defining means, for identifying in said natural language text database clauses that satisfy said condition's and for returning answers to said question clause by means of said clauses that satisfy said conditions (Fig. 1, Answer with the Highest Scores; §2.5).

2. Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view Hedin et al. (U.S. Patent 5,386,556), hereinafter referred to as Hedin.

Regarding **claim 5**, Wang teaches everything claimed, as applied above (see claim 1); in addition, Wang teaches that a syntactic and semantic analysis is performed on the query (§2), but Wang does not specifically teach "a manner adverb condition stipulating that a clause constitutes an answer to said question clause if a lexically headed constituent having the syntactic function of manner adverb of said question clause has a corresponding lexically headed constituent in said clause having the syntactic function of manner adverb and having an equivalent lexical meaning." However, the examiner contends that this concept was well known in the art, as taught by Hedin.

Hedin discloses a natural language analyzing apparatus and method that parses a query and includes a representation for a verbal construct (col. 8, lines 43-48), which would necessarily include manner adverbs.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Wang by specifically providing a parse of the query that includes manner adverbs, as taught by Hedin, because when asking a how-question, manner is significant.

Regarding **claim 6**, Wang teaches everything claimed, as applied above (see claim 1); in addition, Wang teaches that a syntactic and semantic analysis is performed

on the query (§2) and that for where-questions, location features are important, **SemType** = location), but Wang does not specifically teach "a place adverb condition stipulating that a clause constitutes an answer to said question clause if a lexically headed constituent having the syntactic function of place adverb of said question clause has a corresponding lexically headed constituent in said clause having the syntactic function of place adverb and having an equivalent lexical meaning." However, the examiner contends that this concept was well known in the art, as taught by Hedin.

Hedin discloses a natural language analyzing apparatus and method that parses a query and includes a representation for a verbal construct (col. 8, lines 43-48), which would necessarily include place adverbs.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Wang by specifically providing a parse of the query that includes place adverbs, as taught by Hedin, because when asking a where-question, location is significant.

Regarding **claim 7**, Wang teaches everything claimed, as applied above (see claim 1); in addition, Wang teaches that a syntactic and semantic analysis is performed on the query (§2), but Wang does not specifically teach "a time adverb condition stipulating that a clause constitutes an answer to said question clause if a lexically headed constituent having the syntactic function of time adverb of said question clause has a corresponding lexically headed constituent in said clause having the syntactic

function of time adverb and having an equivalent lexical meaning." However, the examiner contends that this concept was well known in the art, as taught by Hedin.

Hedin discloses a natural language analyzing apparatus and method that parses a query and includes a representation for a verbal construct (col. 8, lines 43-48), which would necessarily include time adverbs.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Wang by specifically providing a parse of the query that includes time adverbs, as taught by Hedin, because when asking a when-question, the time of an event is significant.

Regarding **claim 8**, Wang teaches everything claimed, as applied above (see claim 1); in addition, Wang teaches that a syntactic and semantic analysis is performed on the query (§2), but Wang does not specifically teach "a causal adverb condition stipulating that a clause constitutes an answer to said question clause if a lexically headed constituent having the syntactic function of causal adverb of said question clause has a corresponding lexically headed constituent in said clause having the syntactic function of causal adverb and having an equivalent lexical meaning." However, the examiner contends that this concept was well known in the art, as taught by Hedin.

Hedin discloses a natural language analyzing apparatus and method that parses a query and includes a representation for a verbal construct (col. 8, lines 43-48), which would how include causal adverbs.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Wang by specifically providing a parse of the query that includes causal adverbs, as taught by Hedin, because when asking a how-question, causal adverbs are significant.

3. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of well known prior art (MPEP 2144.03).

Regarding **claims 14 and 15**, Wang teaches everything claimed, as applied above (see claim 1), but Wang does not specifically teach "(claim 14) [a] computer readable medium having computer-executable instructions for a general-purpose computer to perform the steps recited in the claim 1; and (claim 15) [a] computer program comprising computer-executable instructions for performing the steps recited in the claim 1." However, the examiner takes official notice of the fact that the use of a computer program stored on a computer readable medium for the purpose of executing question-answering algorithms was well known in the art.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Wang by implementing the above-mentioned method and system on a computer, because this practice is necessary for the execution of the algorithms.

Response to Arguments

4. Applicant's arguments filed 8/10/05 have been fully considered but they are not persuasive.

5. Applicant asserts beginning on page 17:

> Thus, Wang et al. is directed to improving the accuracy of question answering. However, Wang et al, does not show, teach or suggest using the syntactic function in the actual identification of answers to questions. *Applicant notes that Wang et al. identifies syntactic functions in an initial analysis*, but does not use it in the actual matching criteria as indicated in the table in section 2.4 page 32. Thus, Wang et al. teaches away from the claimed invention as claimed in claims 1, 13 and 16 as explained in more detail below. (Italics added)
>
> Wang at al. discloses using a SemType as playing a significant role in improving question answering performance (section 2.2.1 second paragraph, page 30.) Thus, nothing in Wang at a/. shows, teaches or suggests a) *defining a set of conditions, where the conditions comprise a condition stipulating that, for a clause in the natural language text data base to constitute an answer to a question clause*, at least one of the constituents of the question clause should have a corresponding constituent in the clause having the same syntactic function and an equivalent lexical meaning as claimed in claims 1 and 13 or b) defining a set of conditions comprising a condition stipulating that, for a clause in the natural language text database to constitute an answer to the question clause, *the clause comprises a word token having the same lemma as the selected word token in the question clause and being comprised in a constituent having the same syntactic function as the identified constituent in the question* as claimed in claim 16. Rather, Wang et al. discloses that the text is parsed and the words tagged with a semantic function (LABEL) but Wang et al. does not disclose the use of the LABEL of each word directly in the matching rules for finding an answer to a question (see the table in section 2.4, page 32). Instead, Wang et al. merely discloses a semitype plays a significant role. (Italics added)

As acknowledged by the Applicant in the first quoted paragraph above, Wang does identify syntactic function in an initial analysis (also §1, ¶1 "using a combination of

syntactic and semantic features"; §2.2.1, ¶2; Fig. 2, note: all words have the feature LABEL—a syntactic function, SEM_TYPE—meaning; etc.). Furthermore, the Examiner contends that Wang uses syntactic functions during matching. For example, see section 2.5, "Answer Modules" (§2.5.1 ¶2, "phrase to phrase comparison ..."; §2.5.2, ¶2 **"in the end, the full set of features performed better",** i.e, all the features were used, including syntactic functions, during the answering process, where of course a match would indicate a potential answer). Thus, Wang teaches "at least one of the constituents of said question clause should have a corresponding constituent in said clause having the same syntactic function and an equivalent lexical meaning).

Allowable Subject Matter

6. Claims 16-20 are allowed.

It is noted that the closest prior art of record, Wang teaches the use of syntactic functions during a question answering process, but Wang does not teach determining a syntactic function of interest based on an analyzing step and the identified interrogative pronoun; identifying a constituent having the determined syntactic function in the question clause; and identifying a constituent having the determined syntactic function in the question clause. Thus, independent claim 16 is allowable over the prior art of record because the cited prior art alone or in combination, does not fairly suggest or disclose the claimed combination of features.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to V. Paul Harper whose telephone number is (571) 272-7605. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571) 272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

10/11/05

V. Paul Harper
Patent Examiner
Art Unit 2654

RICHEMOND DORVIL
SUPERVISORY PATENT EXAMINER